ELLIOT, (J. W.)

PAPERS ON

ABDOMINAL SURGERY.

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PERFORATION OF THE VERMIFORM APPENDIX, CAUSING AN INTRA-PERITONEAL ABSCESS AND GENERAL ADHESIVE PERITONITIS: LAPAROTOMY AND DRAINAGE—RECOVERY.

The patient was a physician in active practice, in the prime of life (thirty-two years) and in perfect health. In the last week of August he had a severe colic lasting three days, and requiring a dose of morphia, and subsequently he had occasional slight pains. He had eaten a great deal of fruit during the autumn, especially grapes.

On the night of October 29th he was attacked by a severe pain in the abdomen, for which he took morphia subcutaneously. On the following morning, October 30th, the pain was extremely severe, with paroxysms, when chloroform, as well as morphia, was used to give relief. Morphia was given continuously every four to six hours. The seat of pain was between the umbilicus and pubes, extending to the right side, and shooting down into the bladder, penis and testicles, so that it seemed like the passage of a renal calculus. Micturition and defecation were painful and difficult. The evening temperature was 102°. He vomited during the evening.

October 31st. He had diarrhœa, with severe gripes. There was pain and tenderness over the whole abdomen, most marked in the lower part. The colon seemed to be full, but there was no tumor to be felt on the right side. Temperature 102°, pulse 120.

November 1st. The abdomen was more rigid and somewhat distended; the pain in the left iliac fossa was nearly as great as in the right. Micturition became impossible, and a catheter had to be used from that time on. A hot-water injection excited very severe griping pain. Temperature 102·8°.

November 2d. The abdomen was much more distended. Morphia was given in one-third grain doses.

On November 3d I first saw the patient, with Drs. Cutler and Wood, of Waltham. Although thoroughly under morphia he complained of severe pain and gripes over the entire abdomen, quite as much on the left side as on the right. His mind was wandering, and he was constantly picking at the bedclothes. His features looked pinched. The abdomen was greatly distended, hard, and as tight as a drum. *There was no dulness or tumor to be found.* Examination by rectum gave no positive evidence. Pulse 120. Temperature 101·5°. There was evidently a severe general peritonitis in process.

Dr. Cutler had already made the probable diagnosis of peritonitis, due to appendicitis, and I agreed with him. All the symptoms had become worse within twenty-four hours, and the situation seemed very grave. I thrust a good-sized aspirating needle in different directions into the right iliac fossa, but found no pus. As it was then after dark we decided to attempt nothing further that night.

November 4th. The patient had a poor night, with nausea, retching, and vomiting. He also had had symptoms of collapse, with sub-normal temperature. Drs. Fitz and M. H. Richardson were called in consultation. The diagnosis of appendicitis was confirmed. The prognosis was considered unfavorable. Exploratory laparotomy was decided on as giving the best, if not the only, chance of life. At the hour of the consultation the temperature was not far from normal, and the pulse had improved. It was, therefore, thought advisable to wait twenty-four hours, in hope that the fall in temperature which had taken place in the last twelve hours indicated a change for the better.

November 5th. Another collapse, with pulse at 140 during the night. Much gas had passed, and the abdomen was less distended. There was considerable vomiting and retching. Temperature 102°, pulse 113. The pain could be more definitely located in about the middle of the pelvis. The same gentlemen were again in consultation, and laparotomy was unanimously agreed upon. Under ether Dr. Fitz thought he felt a resisting mass in the pel-

vis, but none of the others present were able to confirm this observation.

With Drs. Richardson and Cutler assisting, I opened the abdomen by an incision two and a half inches long, beginning at the anterior superior spine of the ilium, and running parallel to and one inch above Poupart's ligament on the right side. The cœcum and the omentum presented. I examined the cœcal region and passed my fingers towards the umbilicus, and then down over the pelvis. No cake or fluctuation was felt, but there was a vague feeling that the intestines were more firmly glued together in that direction. On separating those adhesions I opened a foul-smelling abscess, containing two or three ounces of pus, which ran out over the peritoneum. This cavity, when empty, seemed about the size and shape of an eggshell. It was situated a little to the right of the median line, and just inside the brim of the pelvis. Its walls seemed to be formed by the glueing of intestines and bladder. The vermiform appendix was not seen, as the abscess was nearly three inches from the incision. The abscess and soiled peritoneum being washed with warmed carbolized water 1-80, a glass drainage-tube was placed in the cavity, and the wound partially closed. The operation lasted about twenty minutes. There was considerable shock, the temperature rising to 103·2° that night.

November 6th. Temperature 100°, pulse 120. General condition fairly good. Tube discharged freely. Abdomen much distended and very sensitive.

November 7th. Great improvement in every way. Temperature normal, pulse 100.

November 9th. Doing well. A large dejection after taking two Seidlitz powders. Tympanites less.

November 10th. Temperature and pulse higher. The patient had severe griping pain. The general distention was much diminished, and a prominence had appeared near the wound. The sutures had been removed, and the wound was sloughy.

November 11th. Under ether, the wound was opened, and a quantity of pus, which had collected in the loin, was evacuated. This second abscess was undoubtedly due to contamination of the peritoneum at the operation.

After this the temperature was irregular for a few days, but there was a steady general improvement. The tubes were washed frequently and drained well. Intestinal gas occasionally escaped from the tube.

November 19th. The patient was in excellent condition. Fæcal matter was washed out from the sinus.

November 28th. General condition good. No fæcal matter had been observed to come from the wound for several days.

December 5th. The drainage tubes had been removed, and the wound had nearly healed.

Recovery complete.

In the vast majority of cases the perforated appendix gives rise to an abscess, which becomes glued to the abdominal wall, and which can be felt and opened from the outside without opening the peritoneal cavity. In a few cases the perforated appendix is not encapsuled, but remains free in the peritoneal cavity, giving rise to general purulent peritonitis, or it may be the cause of an abscess which forms between the intestines deep in the abdominal cavity, as in the case here reported. These cases present the general symptoms of perforation of the bowel, and are almost always fatal when left without operation. Laparotomy is obviously the operation indicated. Thus far, unfortunately, very few have been saved by operation.

Dr. Weir,[1] of New York, has recently collected the cases in which laparotomy has been done for perforation of the vermiform appendix. His table includes twelve cases, with three recoveries. With the idea of trying to establish the mortality of this operation, and without discussing the advisability of each operation, I shall include two more cases, one reported by Barlow and Godlee,[2] recovered, and one by Gant,[3] died. This makes fourteen cases, with four recoveries; to which may be added my case, which is almost exactly like Dr. Weir's last case, and we have fifteen cases, with five recoveries.

In these cases the appendix has been removed five times, with only one recovery, Dr. Hall's case. Removal of the appendix,

[1] Med. Record, June 11, 1887.
[2] Med. Times and Gazette, Dec. 19, 1885.
[3] Med. Record, 1887, xxxi. 22.

then, increases the mortality. It is, moreover, unnecessary when it is so glued to the intestines as to form part of an abscess cavity which can be drained. When, however, there is general purulent peritonitis, and the perforated appendix is free in the peritoneal cavity, it should be removed.

I am greatly indebted to Dr. Wood, who scarcely left the patient's bedside for two weeks, and who has kindly furnished me with notes.

TUBERCULOSIS OF THE PERITONEUM: EVACUATION OF ASCITES BY LAPAROTOMY — CURE.

THE patient was a delicate-looking girl of fourteen years, with red hair. Her mother brought her to me on account of an enlargement of the abdomen. This enlargement had been noticed about a year previous, and had steadily increased. The child had lost health and strength, but complained of nothing else.

I found the abdomen greatly distended. The enlargement was uniform. Fluctuation was evident, and hard masses were to be felt at various points. On percussion, the left flank was dull, while the right was tympanitic; there was dulness over the whole of the rest of the abdomen. The percussion note did not change on change of position.

There was a chronic vaginitis. The uterus was small and in normal position. Douglas's fossa was not bulging into the vagina. There was an anæmic heart murmur and amenorrhœa for three months. I made the probable diagnosis of ascites due to tuberculosis of the peritoneum, and for further evidence drew off some fluid, which was sent to Dr. Gannett for chemical and microscopic examination. He reported that the fluid was undoubtedly ascitic, and suggested tuberculosis of the peritoneum, although he had failed to find the tubercle-bacillus. I advised laparotomy, with evacuation of the fluid, in the hope of curing the disease. A month later the abdomen was larger, and both loins were found tympanitic, while the rest of the abdomen was dull on percussion, and change in position did not change the percussion note. This evidence caused some of the gentlemen who saw the case with me to consider it a thin-walled ovarian cyst.

On December 12, 1887, I opened the abdomen and evacuated two pails full of ascitic fluid. The peritoneum was thickened and adherent to the subperitoneal fat. The omentum, intestines, and all the organs were studded with small, hard, grayish-white lumps, which felt like shot (tubercles). The intestines were

drawn up by the diseased mesentery and held in the upper abdomen, so that they did not present at the opening, nor did they fall into the pelvis after the fluid was evacuated, but air was sucked in to fill the vacuum.

The omentum was rolled up and contracted into a long mass of tissue of the size and shape of a large sausage. The ovaries and tubes were not enlarged, but were studded like the rest of the organs with tubercles. A small amount of bloody fluid was left in the pelvis, as it seemed to form about as fast as it could be sponged out.

The abdomen was closed without drainage. The operation lasted twenty minutes. Recovery was uninterrupted, the wound healing by first intention. The patient went home at the end of three weeks.

Dr. R. H. Fitz, who was present at the operation, kindly examined a bit of the peritoneum microscopically, and reported that the case was peritoneal tuberculosis. Dr. Sears found a tubercle-bacillus in one of the sections of the hardened fragments.

Four months after the operation the patient was examined at my office. She had grown fat and rosy, and said that she was perfectly well. The abdomen was flat and soft, all the hard masses having disappeared. There was no ascitic fluid present. In short, the patient seemed to be cured.[1]

In looking over the reported cases of laparotomy for tuberculosis of the peritoneum, I find that almost all the operations have been done either as exploratory operations or from a mistake in diagnosis. It is only within the last year or so that the operation has been deliberately undertaken for the purpose of curing the disease. Dr. Cabot's second case and this case of mine are among the first reported where, the diagnosis being made, the operation followed for the purpose of cure, and cure resulted. This, it seems to me, is an important step forward in abdominal surgery.

So far as I am able to learn, this disease appears clinically in three forms: In the first form there is a hard, circumscribed mass of tubercular tissue at one or more points in the peritoneal cavity,

[1] Nine months after the operation the patient remains perfectly well.

without any ascitic fluid. There is one such case reported, where a semi-solid mass was felt in the region of the ilio-cæcal valve, which was supposed to be malignant disease, but, on opening the abdominal cavity, the cæcum and vermiform appendix were found rolled up in a hard mass, and studded with tubercles. This patient recovered entirely, although this form of disease is not usually improved by the operation.

In the second form there is an encapsuled ascites usually just above the pelvis, and the diagnosis is difficult. Like other varieties of encapsuled peritonitis, there is a tumor, evidently fluctuating, but without a definite outline, with only a vague sense of limitation.

In the third form there is free ascitic fluid, with occasional hard masses to be felt.

Out of twenty-nine cases collected by Fehling,[1] twenty-one were encapsuled ascites. Of these, fifteen were cured (eight over one year previous), six died. In five cases there was free ascitic fluid; of these, two were cured and two improved. He also found that out of forty cases collected, only two were men. He reasoned from this that, considering the frequency of genital tuberculosis in men, one would expect at least an equal frequency of peritoneal tuberculosis in men and women; therefore, he thought that peritoneal tuberculosis was probably secondary to tuberculosis of the Fallopian tubes in women, although it often seemed to be primary.

Some cases have recovered spontaneously; some have died of phthisis very soon after the operation.

Why recovery takes place after the operation is still a mystery. Ahlfeld[2] reports a case of what appeared to be tubercular nodules on the peritoneum, where the patient died one and one-half years later of cancer of the uterus: at the autopsy the tubercles had disappeared, and only adhesions were found in their place.

We need more reported cases to be able to judge what proportion will be ultimately cured, but the immediate relief alone is sufficient to indicate the operation.

[1] Centb. f. Gynæcol., No. 45, 1887.
[2] Centb. f. Gynæcol., No. 48, 1887.

A CASE OF CHRONIC SALPINGITIS; TUBO-OVARIAN CYST, ACUTELY INFLAMED; HEMORRHAGE INTO THE CYST: OPERATION — RECOVERY.

On May 16th, 1886, I was asked by Dr. Worcester, of Waltham, to see a patient with pelvic inflammation, who was not doing well.

Mrs. J., aged 39 years, had been married twenty years. She had always been well before marriage. One year after marriage, she had a child. During this pregnancy, she suffered from a pain in her right side. After the child was born, she was sick in bed for several weeks. She thought that a part of the after-birth did not come away immediately, but gradually sloughed out, causing a very disagreeable white discharge. Since then, she had never been well. During the next two or three years, she had two miscarriages. She said she had "had womb trouble for ten years," and had been treated by several doctors, one of whom told her that she had "catarrh of the womb." Within the last four years, she had had three severe hemorrhages, which occurred at intervals of about one year. Otherwise the catamenia had been regular, but profuse. For the last ten years, she had been disabled during menstruation. She had pain in the back before the flow began, pain across the abdomen during the first two days, and tenderness several days later. Her right side had always troubled her, and whenever she took cold it was especially tender and painful. She had had a white discharge ever since her marriage, and for ten years had had occasional (six or eight in all) attacks of pain in the lower abdomen, accompanied by a discharge from the vagina of very offensive matter.

About three weeks before I saw her, she had taken cold, while at work in the garden, during menstruation. She then began to be very tender across the lower abdomen, and to flow profusely, and soon became feverish and quite ill. On May 1st, Dr. Worcester was called, and found pain and tenderness in the right

groin and iliac fossa, also in the right hypochondrium, with some resistance on pressure. Temperature 100° F., pulse 100. He ordered poultices, hot douches, and morphine. A week later the vaginal discharge became very offensive, the pain and tenderness were increasing, and the temperature was gradually rising.

On May 15th, condition unchanged.

When I saw her on May 16th, she had a yellowish-white color, and seemed to be quite ill. The temperature was about 100° F. She had a profuse bloody discharge, which was extremely offensive in spite of frequent douches. On examination, I found a fluctuating tumor, which filled the right side of the pelvis, extending two inches above the pubes. This tumor was tender, but movable within certain limits, and seemed to extend towards and to cling to the right side of the pelvis. The uterus could be felt small and hard, pushed somewhat to the left and slightly backwards, but entirely separate from the tumor.

Dr. Worcester had examined the day before, and had found no tumor. Its growth must therefore have been rapid. The general appearances were very suggestive of a pelvic abscess, but the very bad smell of the blood discharged led me to think that it must have been retained somewhere before it appeared in the vagina. As the uterus was small and hard, it seemed to me to follow that the blood must come from the Fallopian tube, where it was retained, and formed the tumor which I had felt, but was slowly leaking out through the uterus and vagina.

I confirmed Dr. Worcester's diagnosis of pelvic inflammation, and gave my opinion that the tumor was probably a pelvic abscess, but that it might be a hemorrhage into the Fallopian tube. I advised waiting a day or two, and carefully watching the course of the disease, with preparations for an operation at short notice. The next day, I was notified by Dr. Worcester that the temperature was higher, and that the patient was not so well, and was asked to come out prepared to do what was necessary.

On May 18th, the following day, I found the temperature 102½° F., the pulse 120. The tumor had almost doubled in size in two days, and could be plainly felt, extending nearly up to the umbilicus. The foul discharge of blood had almost entirely

stopped. It was very noticeable that the tumor as it grew still hugged the right side. My previous suspicion of hemorrhage into the Fallopian tube seemed to be confirmed by this rapid increase in size. But this increase might also occur with an abscess, and the high temperature certainly suggested pus formation. I was in great doubt whether it was best to aspirate and drain the tumor per vaginam, or to do laparotomy at once. Dr. Worcester favored laparotomy, and suggested that the stinking discharge would make the vagina a septic field of operation.

I decided to do laparotomy, believing that I had a Fallopian tube to deal with, but thinking that if it should turn out to be an abscess, I could drain it the more thoroughly from above and below.

The operation was done in a small kitchen. Although I had brought my instruments, the operation must be regarded as an emergency operation, as I was not prepared for such a very serious affair as it turned out to be. Drs. Cutler and Worcester most kindly and skilfully assisted me. A nurse from Dr. Worcester's training school etherized. We had corrosive sublimate and carbolic. The kitchen was very clean, and we used the cooking utensils for our antiseptic solutions.

On opening the abdomen, we first encountered a cyst of the broad ligament as large as a cocoanut, which I emptied with a trocar. Then I found a large, thick-walled, semi-fluctuating mass filling the right side of the pelvis and part of the abdomen. This mass had no sign of a pedicle, but seemed to grow flat out of the pelvic wall. Its removal seemed to me an impossibility. However, I pulled up the uterus, and ligated the right broad ligament. While doing this, I saw that the Fallopian tube formed a part of the tumor. I began then to tear up the mass in every direction with my finger nails. Finally, with three fingers deep in Douglas' fossa, I succeeded in getting below and behind the tumor. It then began to peel out; but at this point it ruptured, and we were deluged with a stinking mixture of blood and pus, its contents. This being sponged away, I proceeded to forcibly tear the tumor out. I found at length that the Fallopian tube formed the pedicle. There was very little bleeding.

The adhesions were very dry and tough, evidently of long standing. The laceration of the parts was very extensive. The peritoneum was stripped off the whole side of the pelvis, and the deep cellular tissue was opened and lacerated in various places. The whole broad ligament was removed with the mass. Part of the cyst came away in shreds, and small portions were left sticking to the pelvic wall. After sponging out, a glass drainage-tube was placed in the pelvis, and the patient put to bed. The operation was begun after 4 o'clock in the afternoon, and lasted two hours. The mass removed proved to be a most interesting specimen. It was the right Fallopian tube, very much *thickened* and elongated (hypertrophied), *only slightly dilated*, full of pus and blood, and glued to a suppurating ovarian cyst, forming the so-called tubo-ovarian cyst. There was also a cyst of the broad ligament.

Under Dr. Worcester's most excellent after-treatment, the patient recovered rapidly. The temperature rose to 101° F., and fell to normal on the third day, when the drainage-tube was removed. There was no vomiting, and no morphia was given until the third day.

Dr. R. H. Fitz, Professor of Pathology at the Harvard Medical School, kindly furnished me with the following minute description of the specimen: —

Dear Doctor Elliot: — The further examination of your specimen resulted as follows: The Fallopian tube was dilated, tortuous, and elongated to the extent of nearly six inches. Its wall was in general at least one-eighth of an inch thick, and in places, corresponding with the beginning of the varicosities, nearly twice as thick. The thickened wall was dense and white, the mucous and middle coats being fused. The inner surface was rough, injected, of a grayish-brown color, with specks of red and snuff color.

The outer end was intimately connected with a sacculated cyst as large as a small orange. There was no sharply defined line of demarcation between the two, nor were fimbriæ to be seen. The cavity of the cyst and the canal of the tube communicated by an opening about one-eighth of an inch in diameter. The wall of

the cyst was thick and dense, intimately connected with the tube and the broad ligament. Its inner surface was in part smooth, injected, and hemorrhagic, in part with numerous minute depressions, in which were soft yellow plugs. Elsewhere a reticulated appearance was seen. The wall presented here and there tough, opaque, gray, intimately adherent patches, while elsewhere partly attached fibrinous masses were found. The wall was abundantly cellular and injected, but no epithelial structure could be recognized. In tearing the cyst from the broad ligament, the wall of the former was torn into, and found to contain a flat clot one-third of an inch in diameter. It lay in a cavity, to the walls of which it was intimately adherent. The microscope showed at the border line abundant large fatty degenerated cells, but no characteristic structural details. The surrounding tissue was fibrous, provided with large and tortuous vessels, but with no absolute evidence of the structure of an ovary. Between the layers of the broad ligament was a thin-walled cyst, collapsed, perhaps as large as an orange. Its wall was smooth, shining, easily isolated. It was lined with a cylindrical epithelium.

The diagnosis is as follows: —

Chronic salpingitis; tubo-ovarian (?) cyst, acutely inflamed; parovarian cyst. [Signed] R. H. Fitz.

May 20th, 1886.

From the history of the case and the appearances of the specimen, it seems that the salpingitis must have existed for at least ten years (its origin being uncertain). Its course was chronic, as evidenced by the absence of acute symptoms and by the enormous thickening of the walls of the tube. The tube became glued to the ovary, and formed with it a thick-walled cyst, which contained pus. Its contents were occasionally discharged through the uterus. On taking cold during menstruation, this tubo-ovarian cyst became acutely inflamed, giving rise to pain, fever, and finally to hemorrhage. At first, the blood trickled out through the tube, uterus, and vagina; later it was partially retained, causing distention of the cyst; finally it was almost entirely retained (probably on account of swelling of the

tube), giving rise to rapid and extreme enlargement of the cyst and to alarming symptoms.

The case is, I believe, unique in more respects than one. I have been unable to find another recorded case where the external appearance of blood has led to the diagnosis of hemorrhage into the tube. This extreme thickening with only moderate dilatation of the tube is also uncommon.

The result of the operation was a singular confirmation of the diagnosis, in that the two conditions suggested (pelvic abscess or hemorrhage into the tube) were found to exist in combination.

THIRTY-SEVEN CASES OF LAPAROTOMY.

Since the accompanying table was compiled, I have done seven more laparotomies, viz., four ovariotomies, one hysterectomy, one oöphorectomy for a bleeding fibroid, and a salpingotomy for tuberculosis of the Fallopian tube. All recovered. There are then nineteen ovariotomies with one death, eight cases of removal of ovaries and tubes with no deaths, two hysterectomies with no death. Of the entire thirty-seven, which include all the cases I have ever done, some of them unfinished operations, there were four deaths. They are not selected cases, as I have never refused to operate in an unfavorable case where the operation was indicated, but have considered it a matter of duty to give the patient a last chance. Two out of the four deaths here recorded were of patients in almost a dying state at the time of operation. To offset these trying cases four others have been saved by the operation from a similar condition.

In the thirty-seven cases all the wounds which were closed (that is, where no drainage-tube was used) have, with a single exception, healed by first intention, without a suppurating stitch-hole. There is one case of hernia at the scar, the result of wearing a drainage-tube for over a year. In closing the wound the whole abdominal wall is included in wire sutures, and the patients are always kept in bed for two weeks.

Beside the ordinary methods of cleanliness and antiseptics, I have abandoned sponges as being a cause of infection, and use in their stead an artificial sponge made of worsted, as already described.[1]

There were eighteen hospital patients, with four deaths, and nineteen patients operated on either at home or at a private hospital, without a death.

Under ovariotomy are included both large and small ovarian tumors. Among nineteen cases were four dermoid and three

[1] B. M. and S. Journal, November 26, 1886.

papillomatous cysts. One died. All but one of the others have been heard from, and have remained well. The first five cases have already been reported.[1]

Case VI. was a dermoid cyst complicated with a complete prolapse of the uterus. At the operation I was able to pucker up the broad ligament and include it in my ligature in such a way as to hold the uterus well up in anteversion. It is now nearly three years, and there has been no return of the prolapse.

Case VII. was a small cyst of the broad ligament. After removal it was found to contain a papillomatous nodule of considerable size. This case suggests the importance of early operations.

Case X. Two cysts: one with a twisted pedicle. At the operation the bladder was found spread out flat and glued to the under side of the abdominal wall. This was encountered in the incision, and with difficulty avoided. Two ovarian cysts were removed. One a papillomatous cystoma, which had been treated for a fibroid of the uterus by her physician with ergotine injections; and papillomatous excrescences were found protruding through the holes made in the cyst wall by the injecting needle. These papillomatous excrescences had not yet infected the peritoneum, but had caused ascites. This cyst is preserved in the Warren Museum of Harvard University. The other cyst contained blood, and had a twisted and degenerated pedicle. After the operation the temperature rose to 102° on the first day, and continued high; between 102° and 103°. On the fifth day, the patient being considered septic, the wound was re-opened and a quantity of pus found between the omentum and the abdominal wall. On the sixth day, as the patient seemed to be dying of blood-poisoning, transfusion of salt and water was tried with only temporary benefit, and she died on the same day. It was afterwards discovered that by a mistake of the assistant several instruments not properly cleansed were mixed in with the "laparotomy instruments." I have never been able to decide whether the septic infection came from the doubtfully clean instruments, or from the twisted and degenerated pedicle.

Case XI. was an obstinate and discouraging case of neura-

[1] B. M. and S. Journal, January 29, 1885.

sthenia, sent to me by Dr. J. J. Putnam for local treatment. The uterus was retroverted, and both ovaries were large and tender. After some local treatment and several consultations, Dr. Putnam advised removal of the ovaries. Dr. Homans also advised the operation. The enlarged ovaries proved to be true cystomata. The effect on the neurasthenic condition was excellent, and the patient is now almost perfectly well. The retroversion has never returned.

Cases XIV. and XV. were suppurating cysts so adherent that their removal was impossible. The cyst walls were, therefore, stitched to the abdominal walls and drained. These cases have been reported in full.[1]

Out of a large number of diseased Fallopian tubes which have come under my care within the last three years there were five cases where it was necessary to remove the tubes; one case (No. 12) being included in the ovariotomy table on account of complications. All recovered, although the abdominal cavity was contaminated with pus in two cases.

Case XIX. was a double salpingitis complicated with a retroversion of the uterus, which was permanently cured by puckering up the broad ligaments. Menstruation has continued, although the tubes were removed close to the uterus.[2]

Case XX. The left Fallopian tube was as large as a cocoanut and imbedded in the broad ligament and adhesions. The right was enlarged to the size of a fist so close to the uterus that there was no pedicle. It was necessary, therefore, to amputate it without clamp or ligature, and take up the vessels separately. Pus escaped into the abdominal cavity, and a glass drainage-tube was used. The patient made an excellent recovery, and was up on the fourteenth day.

Case XXII. was a very rapidly growing fibroid. The uterus was amputated at the internal os. The uterine canal at that point was large enough to admit two fingers. The stump was constricted with a wire ecraseur, and treated extra-peritoneally. The peritoneum was stitched to the stump below the wire. Recovery was uninterrupted.

[1] B. M. and S. Journal, November 11, 1886.
[2] B. M. and S. Journal, April 15, 1886.

THIRTY CASES OF LAPAROTOMY.

TABLE I. — OPERATIONS FOR DISEASES OF PELVIC ORGANS.

A. — Diseases of the Ovary. Ovariotomy.

No.	Date of operation	Age	Married or single	Hosp. or private	Pathological condition found	Ovaries removed	Drainage	Result	Remarks
1	1884 January	32	M.	H.	Large cystoma deep in broad ligament	Both	No	Recovered	....
2	March	49	M.	H.	Dermoid cyst (large)	One	No	Recovered	Well in 1886
3	October	22	S.	H.	Cystoma	One	No	Recovered	Alive in 1888
4	October	24	S.	P. H.	Dermoid cyst	One	No	Recovered	Well in 1888
5	November	28	M.	H.	Parovarian cyst	One	No	Recovered	Well in 1887
6	1885 May	38	M.	P. H.	Dermoid cyst	One	No	Recovered	Well in 1888
7	June	25	S.	H.	Papillomatous cyst of broad ligament	One	No	Recovered	Well in 1888
8	October	24	M.	H.	Dermoid cyst L. O. Cystoma R. O.	Both	No	Recovered	Well in 1888. Catamenia have not appeared since operation
9	November	23	S.	P. H.	Small fibroma of ovary	One	No	Recovered	Other ovary removed later by Dr. G.
10	1886 February	40	M.	H.	Papilloma of R. O. Hæmatoma with twisted pedicle L. O.	Both	No	Died	Septic peritonitis
11	April	32	S.	P. H.	Small cystomata of both ovaries	Both	No	Recovered	Well in 1888
12	May	39	M.	P.	Suppurating tubo-ovarian cyst. Cyst broad lig.	One	Yes	Recovered	A very severe operation. Well in 1888
13	1887 January	28	S.	P.	Cystoma both ovaries. Cyst broad ligament	Both	Yes	Recovered	Well in 1888. Catamenia irregular since operation

14	1885 April	19	S.	H.	Suppurating cyst, universally adherent	One	Yes	Recovered	Sinus closed in about one year. Married and well in 1887
15	April	28	M.	H.	Suppurating papilloma universally adherent	One	Yes	Recovered	Relieved for two years, then another tumor appeared, patient lost sight of
					Removal of Ovaries not the Seat of Tumors.				
16	1885 May	37	S.	P.	Fibroid tumor of uterus	Both and tubes	No	Recovered	In 1887 menstruation had never returned. Fibroid disappeared
17	1887 October	30	S.	P.	Profound hysteria of long standing	Both and tubes	No	Recovered	Three months later great improvement. No menstruation
18	1888 January	33	S.	P. H.	Chronic ovaritis and periovaritis	One	No	Recovered	Pelvic peritonitis for 10 years before the operation
					B. — Diseases of the Fallopian Tubes. Salpingotomy.				
19	1885 April	35	S.	P.	Salpingitis	Both Tubes	No	Recovered	A small piece of one ovary left. Menstruation has continued irregularly ever since operation. Patient cured
20	1887 January	27	M.	P. H.	Double pyosalpinx of large size	Both Tubes	Yes	Recovered	Left tube contained 8 oz. of pus
21	May	26	M.	P. H.	Hydrosalpinx	One	No	Recovered	Cured
					C. — Diseases of Uterus. Hysterectomy.				
22	1886 November	37	S.	H.	Fibroid of uterus growing rapidly	....	No	Recovered	Extra peritoneal stump. Temperature normal on third day. One year after operation the patient was well and working in a mill

22 Cases, 1 Death.

TABLE II. — OPERATIONS FOR DISEASES OF OTHER ABDOMINAL ORGANS. A. — Evacuation of Pus.

No.	Date of operation	Age	Sex	Hosp. or Private	Pathological condition found	Operation	Drainage	Result	Remarks
23	1885 June	28	F.	H.	Suppurative peritonitis due to suppurating ovarian cyst	Evacuation of pus and drainage	Yes	Recov.	Patient in a very critical condition at the time of operation.
24	1887 November	32	M.	P.	Intra-peritoneal abscess due to perforating appendicitis	Evacuation of pus and drainage	Yes	Recov.	General adhesive peritonitis. Incision parallel to Poupart's ligament
					B. — Intestinal Obstruction.				
25	1886 May	44	M.	H.	Cancer very high up in rectum	Median incision; bowel stitched to wound and opened	No	Died	Obstruction had existed for a month and the patient was almost in a dying condition
					C. — Evacuation of Ascites.				
26	1886 April	43	F.	P. H.	General peritoneal cancer	Median incision and permanent drainage	Yes	Recov.	Great relief from drainage. Died later of the disease
27	1887 December	14	F.	P. H.	Tuberculosis of peritoneum	Thorough evacuation of ascites	No	Recov.	Great relief. Well nine months later.

5 Cases, 1 Death.

TABLE III. — EXPLORATORY AND UNFINISHED OPERATIONS.

28	1884 April	30	F.	H.	Sarcoma of ovary and pyosalpinx	Exploratory incision	No	Died	Patient in a dying condition operation done as a forlorn hope.
29	1886 May	32	F.	H.	Chronic peritonitis salpingitis and ovaritis	Attempt to remove ovaries and tubes	No	Died	Operation abandoned on account of adhesions. Death from peritonitis. Autopsy showed that the operation was impossible.
30	1887 October	31	F.	P. H.	Fibroid deep in broad ligament	Tumor partially enucleated and blood supply and part of pedicle ligatured	Yes	Recov.	Operation abandoned because the tumor seemed to be on the ureter.

3 Cases, 2 Deaths.

The operations in Table II. were all for very formidable diseases, and the mortality is higher than in Table I.

Case XXIV. was a laparotomy done for perforation of the vermiform appendix.[1]

Case XXV. Intestinal obstruction had existed for a month, and the patient was in a very bad way. There was vomiting, the abdomen was greatly distended, and the pulse was rapid. Nothing could be discovered per rectum. At the operation the seat of obstruction could not be found on account of the enormous distention of the intestines, so a loop of intestine was opened and stitched to the abdominal wound. The intestine failed to unite firmly to the wound (probably on account of the poor general condition of the patient). There was, therefore, leakage of fæces into the peritoneal cavity, which caused peritonitis and death on the eighth day. The autopsy showed a cancerous obstruction high up in the rectum.

Cases XXVI. and XXVII. Both patients were very large with ascites; in one case due to cancer of the peritoneum, and the other to tuberculosis. Both cases were interesting on account of one point in diagnosis; namely, *in both the loins were tympanitic on percussion*, while there was dulness over the whole of the rest of the abdomen; and change of position did not change the percussion notes. This, in itself, is almost a certain sign of an ovarian cyst as against free fluid. Nevertheless, being led to suspect malignancy in the first case by the general bad condition of the patient, I tapped and drew off ascitic fluid. The second case I suspected to be tuberculosis on account of the age of the patient, (fourteen years), and therefore tapped, and got ascitic fluid. At the operations it was discovered that the disease in each case had puckered up the mesentery, and bound the intestines to the back of the abdominal cavity. For this reason the intestines were not free to float on the fluid; hence the tympanitic loins.

Case XXIX. The patient was sent to me by Dr. W. E. Boardman, who had treated her for several years for chronic pelvic peritonitis. He thought the trouble was due to disease of the tubes, but was in doubt about the possibility of removing those

[1] Reported in full in B. M. and S. Journal, January 19, 1888.

organs in this case on account of long and severe peritonitis. The patient was in a deplorable condition, having been unable to earn her living for several years on account of attacks of peritonitis, and being deserted by her husband on account of vaginal tenderness. Her life was a burden, and she wanted to die. She had had two abscesses opened per vaginam, and had been in the City Hospital two or three times, where fluid had been aspirated from the pelvis. At the operation all the intestines and organs were found firmly glued together, so that nearly three-quarters of an hour was consumed in tearing away adhesions to get down to the left ovary. The wall of a small cyst was found matted against the tube and intestine. The tube had become a cicatricial strand. After tearing away a piece of the cyst wall the operation was abandoned as impossible. After vomiting constantly for three days she died. At the autopsy no pus was found, but there was very extensive peritonitis. The ovaries and tubes had become cicatricial tissue, and could not be removed without tearing open the intestines at several points. I cite this case in full because it shows clearly one of the limitations of this operation. After a little successful experience in tearing out universally adherent ovaries or tubes, one is led to suppose that there are no limitations.

I am profoundly impressed by the fact that several of the worst cases recovered when there seemed to be little hope, and that all but one of the fatal cases would probably have recovered if they had been operated on earlier. This leads me to believe that there are still many lives lost for the want of prompt laparotomy. Unfortunately the general practitioner has been over-impressed by recent articles on the "laparotomy craze"; and it is undoubtedly true that ovaries and tubes have been unnecessarily removed by certain operators. I am sure, however, that this view has been greatly exaggerated; and when we come to the more fatal class of diseases, such as intestinal obstruction, perforation, purulent peritonitis and the like, the situation is so difficult and appalling that there is no danger of the operations being lightly undertaken or overdone. Now that such operations are clearly established, what is wanted is a realization by the general practitioner of their value.

No patient should be allowed to die of an abdominal affection without full consideration of the chances of relief offered by laparotomy.

My experience has made me enthusiastic about the operation, and it seems to me that the community is just beginning to get the full benefit of the fine work of the earlier operators. They have shown the possibility of these operations, and established the technique. And now the present generation has so reduced the mortality that the operation has become of the greatest practical value.

New Artificial Aseptic Sponges.

Two years ago I exhibited some new aseptic sponges made of worsted covered with muslin. We have all seen septic trouble from the use of unclean sponges, and we all know the difficulties of making ordinary sponges aseptic. These difficulties amount to almost an impossibility. Billroth found bacteria in sponges which had been soaked five days and more in five per cent. solution of carbolic acid. It is said that Tait never allows any one but his wife to touch his sponges.

In doing laparotomy I have always taken the entire charge of my instruments and sponges, never allowing assistants to clean or prepare them. I found that the preparation and care of the sponges required so much time and attention that a substitute seemed desirable. Various attempts have been made to find a substitute. Bits of linen and wads of absorbent cotton, as used by Schade, are absorbent only when dry, and even then are not very efficient. There are also objections to using dry materials, in that they collect dust and shed lint; also it is convenient to be able to wet a sponge in an antiseptic solution. After many experiments, I found that worsted which absorbs very slowly when dry was sufficiently absorbent when once wet and *thoroughly wrung out.* This sponge is cheap and clean, and has the great

advantage of retaining its elasticity and absorbent power after boiling, which ruins a sponge.

The new sponges are made as follows: —

Part of a skein of coarse white worsted is doubled twice on itself and fastened in the middle so that each end makes a springy coil. The ends are then doubled together and the whole thing is covered with white muslin (the starch being washed out), making an elastic ball.

A ball of worsted thus constructed has an absorbent power about two-thirds as great as a sponge of the same size. It can be boiled and soaked in antiseptics without injury. It costs much less than a sponge. It requires less labor to make it than to prepare a sponge for an operation. It is much more certain to be aseptic. Any dirt shows readily on its white surface. When tested by wiping a mirror it leaves less lint on the surface than a sponge. I have used them for three years, and am much pleased with them; wounds healed well after being wiped with them. Each of the sponges could be safely used for several operations, but they are so cheap that it is better to use new ones for every important operation. The fact that they are somewhat less absorbent than real sponges is of less importance than one might suppose; for since the rubber tube tourniquet and pressure forceps have come into use we have less bleeding than formerly. They have been used quite extensively of late at the Massachusetts General Hospital.